

IN THE CLAIMS:

1. (Currently amended) A cable distribution system, comprising:

a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency; and

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit receptive of one of the video channels converted to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein certain ones of the interface units can receive and decode both video channels containing a digital multiplex and video channels containing analog video and audio signals; and

wherein certain other ones of the interface units can receive and pass to the video displaying apparatus video channels containing analog video and audio signals, but cannot decode and pass to the video displaying apparatus video channels containing a digital multiplex;

wherein at least a portion of the tuner/receiver/decoders in the headend can be shared so that the video channel provided by such a shared tuner/receiver/decoder is provided via one or more service modules to more than one interface unit;

wherein the headend makes determinations about the sharing of resources, multiplexing decisions, frequency planning, and associated frequency conversions based upon dynamic allocation of channels and bandwidth which is based upon channel selections made by users;

wherein the frequency conversions are not based upon an industry standard frequency plan but instead are based upon a custom frequency plan so as to further minimize illegal tapping of video channels sent to the interface units.

2. (Original) A cable distribution system as defined in claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling being bandwidth limited so as to not efficiently carry signals appreciably above 350 MHz.

3. (Original) A cable distribution system as defined in claim 2, wherein the cabling is metallic coaxial cabling.

4. (Original) A cable distribution system as defined in claim 1, further including cabling running between the headend and each of the plurality of service modules associated therewith, the cabling having sufficient bandwidth capacity to be able to efficiently carry signals at least as high as 750 MHz.

5. (Original) A cable distribution system as defined in claim 1, wherein the headend also includes a block of Personal Video Recorders.

6. (Original) A cable distribution system as defined in claim 1, wherein the headend also includes a Video On Demand Server.

7. (Original) A cable distribution system as defined in claim 1, wherein the headend also includes a Personal Computer.

8. (Original) A cable distribution system as defined in claim 1, wherein the headend also includes a DOCSIS frequency converter.

9. (Original) A cable distribution system as defined in claim 8, wherein a DOCSIS forward channel being carried from an Internet service provider to a customer is converted by the DOCSIS frequency converter to a different frequency for passage to the plurality of service modules and associated interface units.

10. (Original) A cable distribution system as defined in claim 1, wherein each of the frequency converters in each of the plurality of service modules is a programmable converter.

11. (Original) A cable distribution system as defined in claim 1, further including a different bandpass filter associated with each frequency converter.

12. (Canceled)

13. (Original) A cable distribution system as defined in claim 1, wherein each service module utilizes the same predetermined frequencies as each other service module.

14. (Original) A cable distribution system as defined in claim 1, wherein each tuner/receiver/decoder tunes, receives, and decodes a given video channel and that channel from that tuner/receiver/decoder can be displayed on every video displaying apparatus associated with that headend.

15. (Original) A cable distribution system as defined in claim 1, wherein the interface unit passes information back upstream to its associated service module that includes channel selection information.

16. (Original) A cable distribution system as defined in claim 15, wherein the information passed back upstream to the service module also includes a DOCSIS return channel that is passed by the service module back to the headend and back to an Internet service provider.

17. (Original) A cable distribution system as defined in claim 1, further including a processor and associated database in communication with the headend and the service module, the processor being functional to control the operation of the receiver/decoders and the database assisting the microprocessor in this functionality and in storing customer viewing preferences.

18. (Original) A cable distribution system as defined in claim 1, wherein the local service module will only convert a selected video channel to the predetermined output frequency associated with a particular interface unit if that interface unit is authorized to receive that selected video channel.

19. (Previously Presented) A cable distribution system as defined in claim 1, wherein the headend includes a cable modem transmission system (CMTS).

20. (Original) A cable distribution system as defined in claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a home run architecture.

21. (Original) A cable distribution system as defined in claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a loop through architecture.

22. (Original) A cable distribution system as defined in claim 1, further including cabling running between each service module and the plurality of interface units associated therewith, the cabling having a tree and branch architecture.

23. (Original) A cable distribution system as defined in claim 1, wherein one or more of the video channels includes MPEG-4 encoded information.

24. (Original) A cable distribution system as defined in claim 1, wherein the headend is a local headend.

25. (Original) A cable distribution system as defined in claim 24, further including a regional headend located at a location remote from the local headend, the regional headend providing video channels at selected frequencies to the local headend.

26. (Previously presented) A cable distribution system, comprising:
a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency; and

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit receptive of one of the video channels

converted to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein at least a portion of the tuner/receiver/decoders in the headend can be shared so that the video channel provided by such a shared tuner/receiver/decoder is provided via one or more service modules to more than one interface unit.

27. (Original) A cable distribution system as defined in claim 26, wherein there are at least two different configurations of interface units, one type provided to customers that are authorized to receive digital audio and video signals and one type provided to customers that are not authorized to receive digital audio and video signals.

28. (Original) A cable distribution system as defined in claim 26, wherein the video channels have been spectrally inverted prior to passage to the interface unit.

29. (Previously Presented) A cable distribution system as defined in claim 28, wherein the interface unit spectrally inverts the received video channel to restore the original audio and video signal orientation before sending it to the video displaying apparatus.

30. (Original) A cable distribution system as defined in claim 29, wherein the at least one interface unit includes a high side LO frequency converter.

31. (Original) A cable distribution system as defined in claim 28, wherein the spectral inversion is performed at the headend.

32. (Original) A cable distribution system as defined in claim 28, wherein the spectral inversion is performed at the service module.

33. (Currently amended) A cable distribution system, comprising:
a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected

video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency;

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit having a frequency converter that converts the frequency of the video channel received from the service module;

cabling running between each interface unit and its associated service module; and

a set-top box associated with at least one of the interface units, the set-top box being receptive of the video channel from the interface unit, the set-top box passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein at least a portion of the tuner/receiver/decoders in the headend can be shared so that the video channel provided by such a shared tuner/receiver/decoder is provided via one or more service modules to more than one interface unit;

wherein each tuner/receiver/decoder tunes, receives, and decodes a given video channel and that channel from that tuner/receiver/decoder can be displayed on every video displaying apparatus associated with that headend;

wherein the interface unit passes information back upstream via the cabling to its associated service module that includes channel selection information;

wherein the local service module will only convert a selected video channel to the predetermined output frequency associated with a particular interface unit if that interface unit is authorized to receive that selected video channel;

wherein the video channels have been spectrally inverted prior to passage to the interface unit;

wherein the interface unit spectrally inverts the received video channel to restore the original audio and video signal orientation before sending it to the video displaying apparatus.

34. (Previously presented) A cable distribution system as defined in claim 39, wherein if the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal, the headend then communicates to the particular service module associated with the customer the location of the requested channel in the multiplexed channel signal.

35. (Previously presented) A cable distribution system as defined in claim 37, wherein if the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal, the headend then communicates to the particular service module associated with the customer the location of the requested channel in the multiplexed channel signal.

36. (Previously presented) A cable distribution system as defined in claim 38, wherein a customer can provide a channel change request to the service module via the interface unit and, in response thereto, the service module commands the frequency converter

corresponding to the particular interface unit associated with the customer to convert the video channel containing the requested channel to the predetermined frequency; and

further wherein if the requested channel is not one of those currently contained in the multiplexed channel signal sent from the headend to the particular service module associated with the customer, the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal sent from the headend to the particular service module associated with the customer;

further wherein if the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal, the headend then communicates to the particular service module associated with the customer the location of the requested channel in the multiplexed channel signal.

37. (Previously presented) A cable distribution system as defined in claim 1, wherein a customer can provide a channel change request to the service module via the interface unit and, in response thereto, the service module commands the frequency converter corresponding to the particular interface unit associated with the customer to convert the video channel containing the requested channel to the predetermined frequency; and

further wherein if the requested channel is not one of those currently contained in the multiplexed channel signal sent from the headend to the particular service module associated with the customer, the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal sent from the headend to the particular service module associated with the customer.

38. (Previously presented) A cable distribution system as defined in claim 26, wherein only a subset of the video channels available to the headend are placed in any given

multiplexed channel signal, the subset being determined by which channels are requested via the interface units associated with the service module receiving that multiplexed channel signal.

39. (Previously presented) A cable distribution system as defined in claim 33, wherein a customer can provide a channel change request to the service module via the interface unit and, in response thereto, the service module commands the frequency converter corresponding to the particular interface unit associated with the customer to convert the video channel containing the requested channel to the predetermined frequency; and

further wherein if the requested channel is not one of those currently contained in the multiplexed channel signal sent from the headend to the particular service module associated with the customer, the headend is requested to arrange for the requested channel to be provided in the multiplexed channel signal sent from the headend to the particular service module associated with the customer.

40. (Currently amended) A cable distribution system, comprising:

a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to

each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency; and

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit receptive via cabling connected to its respective service module of one of the video channels converted to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein at least a portion of the tuner/receiver/decoders in the headend can be shared so that the video channel provided by such a shared tuner/receiver/decoder is provided via one or more service modules to more than one interface unit; and

wherein each of the plurality of interface units can send channel selection information via cabling to its respective service module so that the service module can use the channel selection information to determine which video channel to convert to the predetermined frequency.

41. (Currently amended) A cable distribution system, comprising:

a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency; and

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit receptive of one of the video channels converted to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein the video channels are not de-modulated and then re-modulated at any point after being tuned/received/decoded at the headend and before being received at one of the plurality of interface units.

42. (Currently amended) A cable distribution system, comprising:

a headend receptive of signals from a plurality of video sources, the headend including a plurality of tuner/receiver/decoders that are each controllable to tune/receive/decode a selected video channel and provide the video channel at a selected frequency, wherein certain ones of the video channels contain analog video and audio signals and certain other ones of the video channels contain a plurality of digital video and audio signals multiplexed together to create a digital multiplex, selected ones of the plurality of video channels being multiplexed together by the headend to create one or more multiplexed channel signals;

a plurality of service modules associated with the headend, each service module receiving one or more of the multiplexed channel signals from the headend and providing it to

each of a plurality of frequency converters within each service module that each convert one of the video channels to a predetermined frequency; and

a plurality of interface units associated with each service module, there being one interface unit for each frequency converter of the service module, each interface unit being located at a customer location, each interface unit receptive of one of the video channels converted to the predetermined frequency, the interface unit passing a video and an audio signal in the video channel to a video displaying apparatus;

wherein each service module communicates information to the interface units associated with the service module, the information including ~~the predetermined frequency and/or the~~ location of the video channel within the digital multiplex in the case of the digital multiplex being sent to the interface unit.